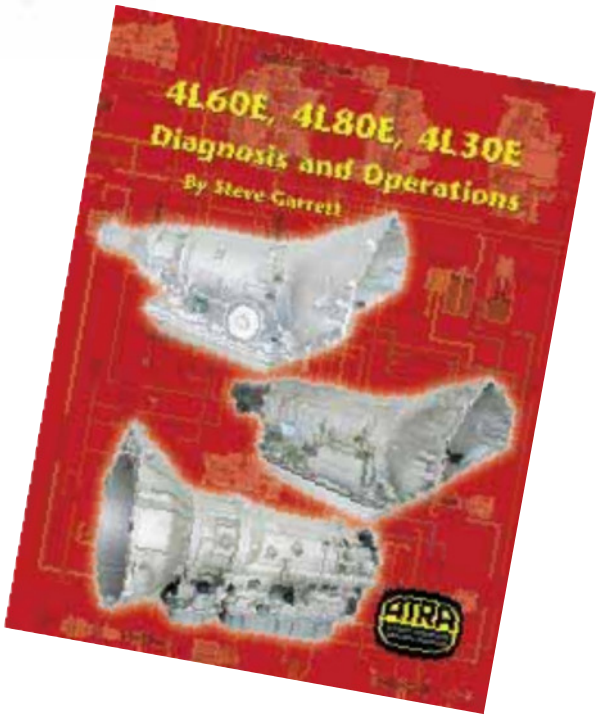
4L30E


4L60E, 4L80E, 4L30E
Diagnosis and Operations
By Steve Garrett
AIRA

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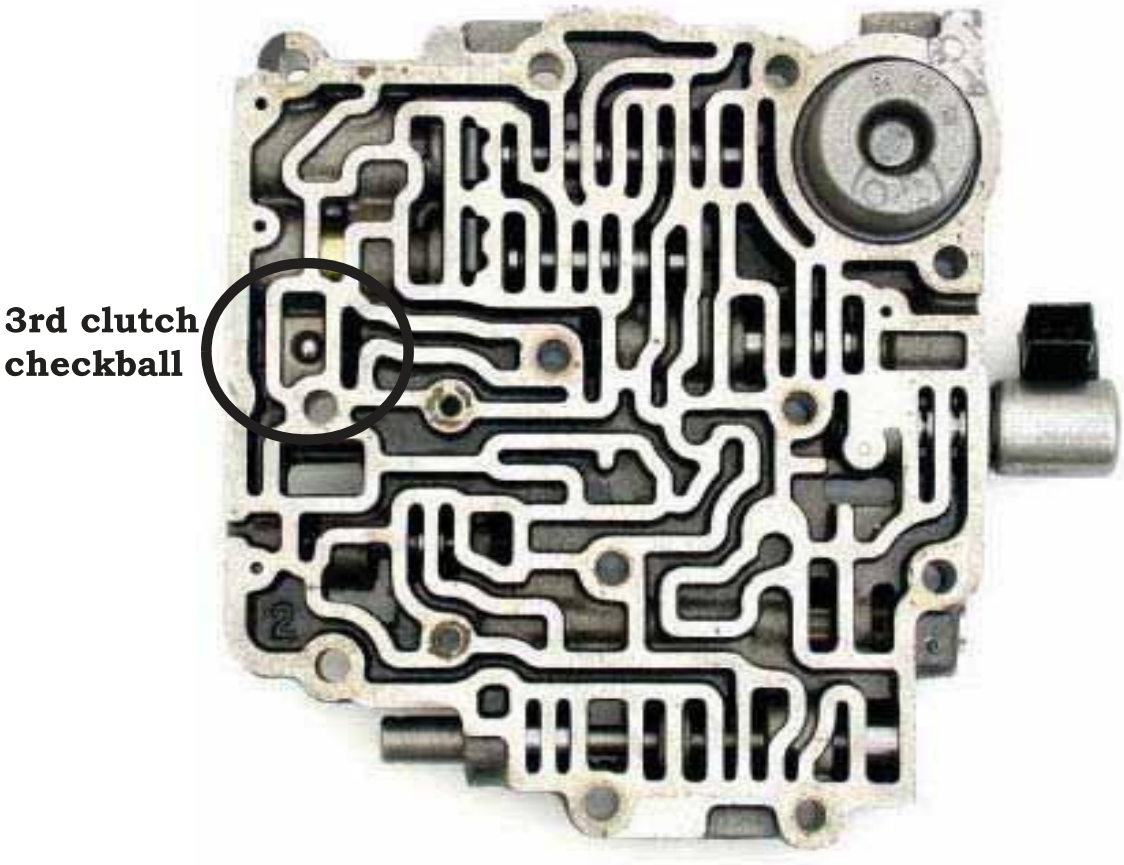
Checkball Location

3rd Clutch Checkball Missing

A bindup or slip condition in 4th gear may be caused by a missing or leaking 3rd Clutch Checkball. When this Checkball is missing, 1-2 Servo release pressure can leak in 4th gear causing the 1-2 band to apply.



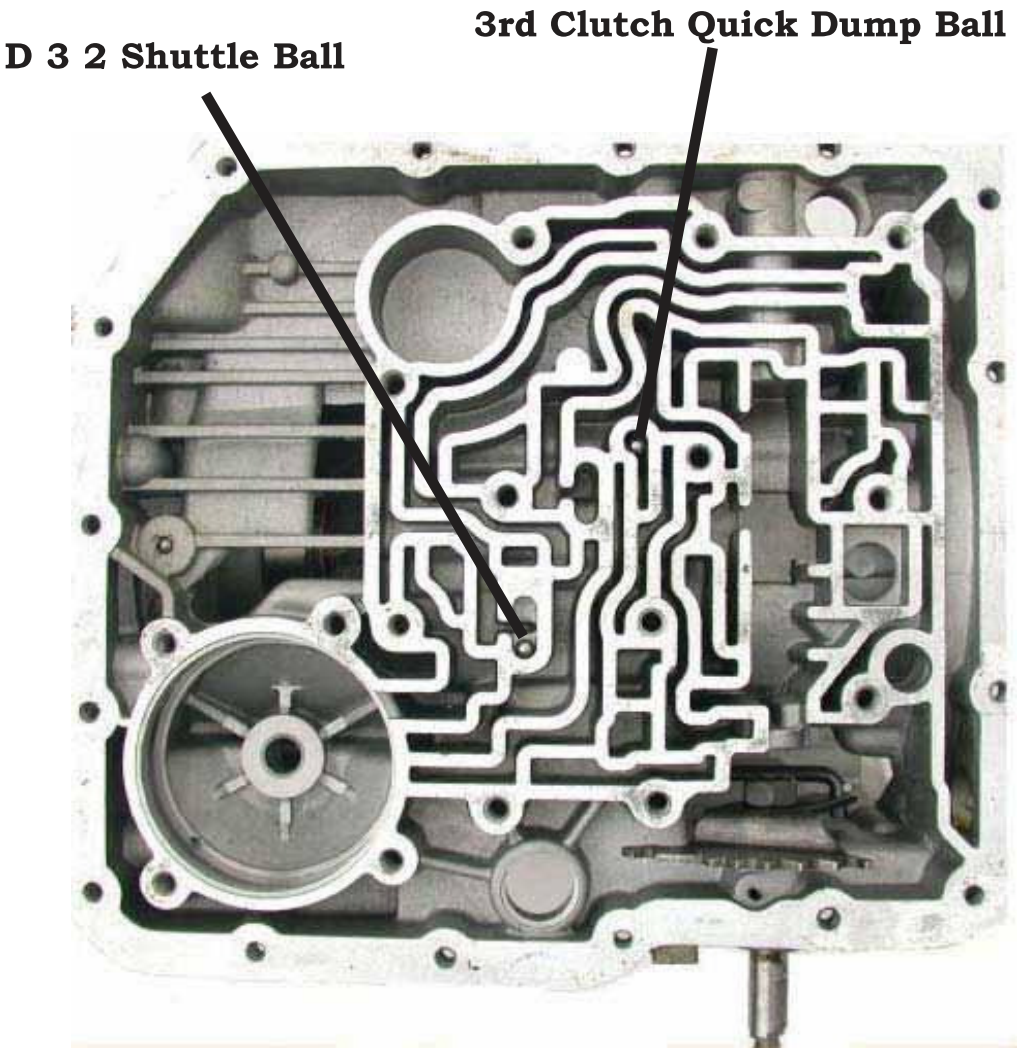
Checkball Location *(continued)*

D 3 2 Shuttle Ball Missing:

A missing D 3 2 Shuttle Ball will cause low mainline pressure in D4 and Manual Low and have normal pressure in D3 and Manual 2.

3rd Clutch Quick Dump Ball Missing:

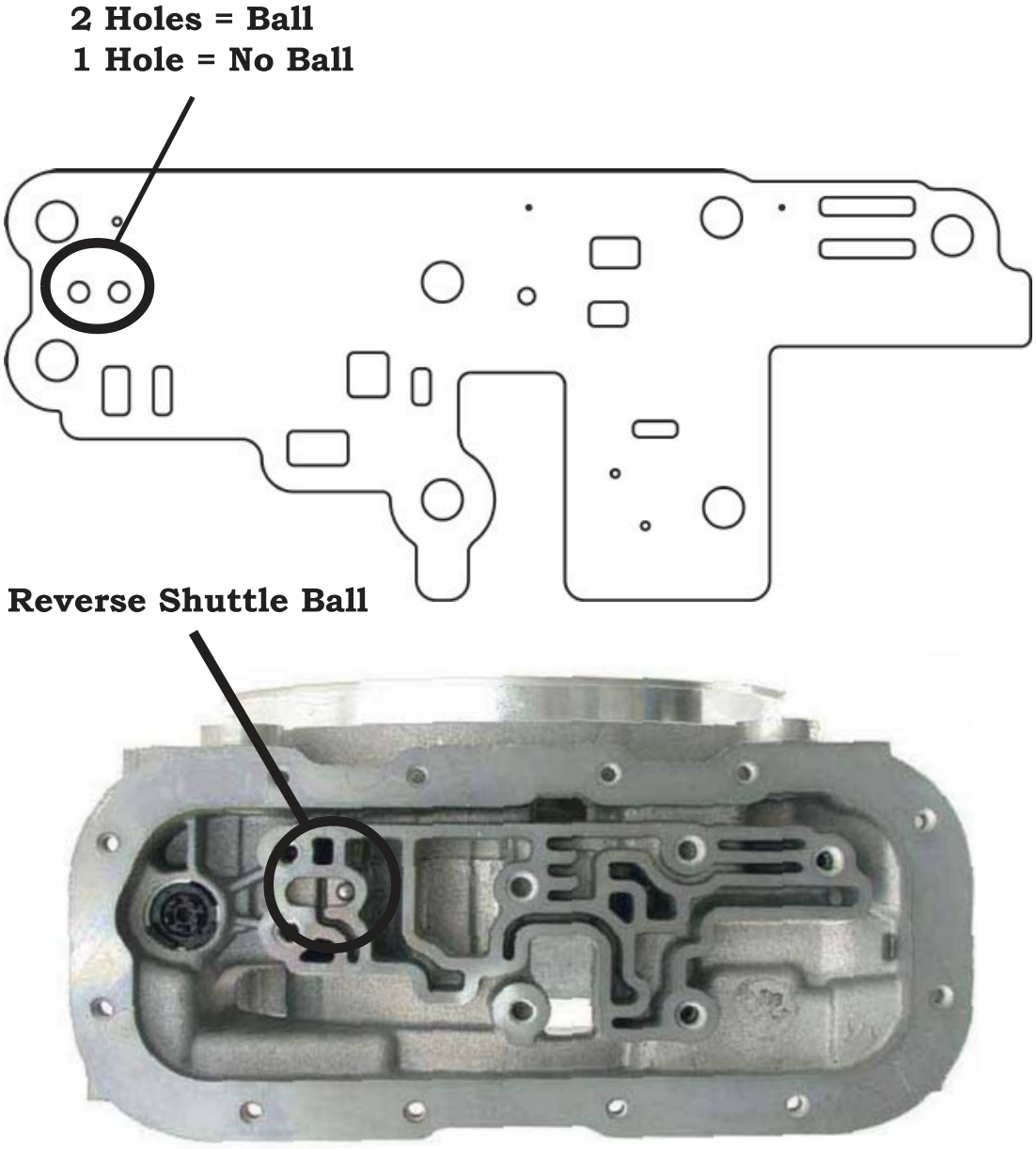
A missing 3rd Clutch Quick Dump Ball will cause a 3-2 down shift clunk or bind on the 3-2 down shift.



Checkball Location *(continued)*

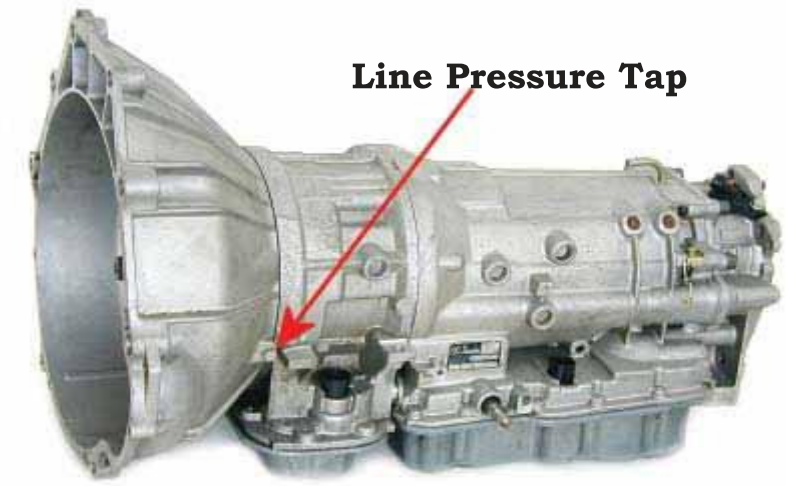
Reverse Shuttle Ball Missing:

A missing Reverse Shuttle Ball will cause a no lockup condition in all forward ranges. In Reverse, a missing Reverse Shuttle Ball can cause the 2nd Clutch to partially apply, burning the 2nd Clutch and possibly causing a bind in Reverse.

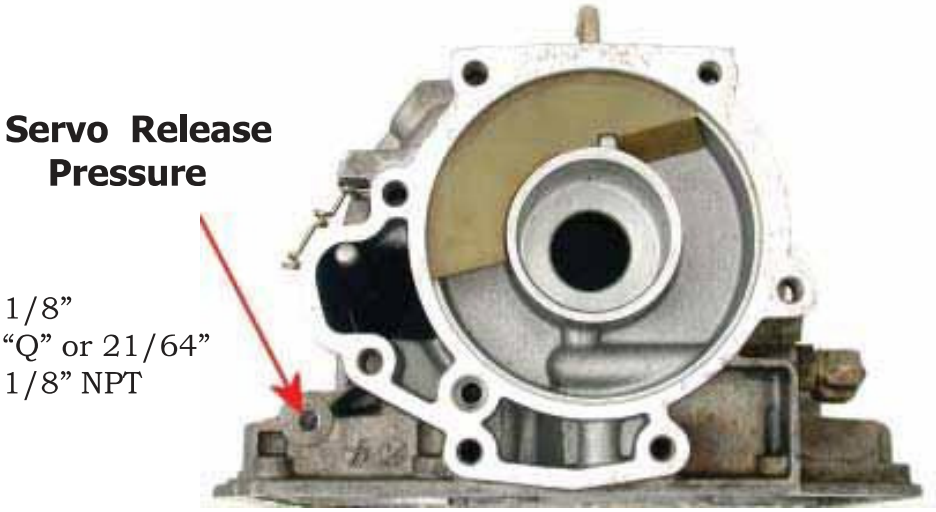


Pressure Taps

Pressures:		
	Idle	Stall
Drive	45-55	150-160
Reverse	65-75	210-225



The Servo Release Pressure should be equal to mainline pressure in 3rd and 4th gears and zero in all other gears including Park and Neutral.



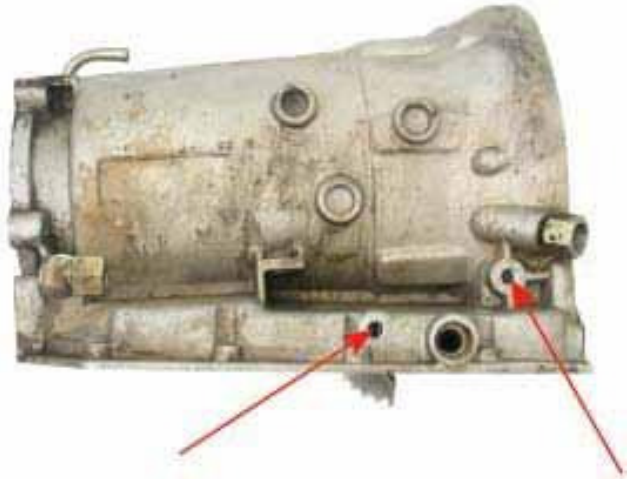
Pilot Drill: 1/8”
Tap Drill: “Q” or 21/64”
Tap: 1/8” NPT

Line Pressure Taps

2nd Clutch Pressure:
The 2nd Clutch pressure should be equal to mainline pressure in 2nd, 3rd and 4th gear and zero in all other gears including Park and Neutral.

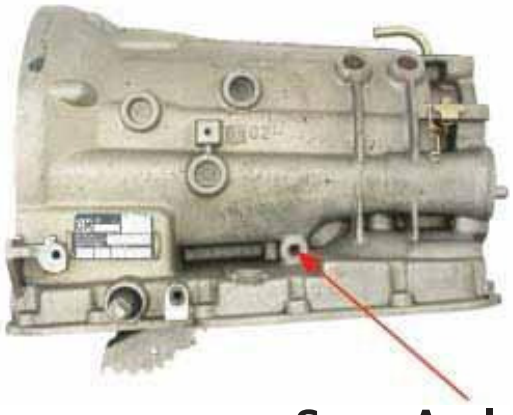
4th Clutch Pressure:
The 4th Clutch pressure should be equal to mainline pressure in 4th gear and zero in all other gears including Park and Neutral.

Servo Apply Pressure:
The Servo Apply pressure should be equal to mainline pressure in all forward ranges and zero in Park, Reverse and Neutral.



2nd Clutch Apply Pressure

4th Clutch Apply Pressure

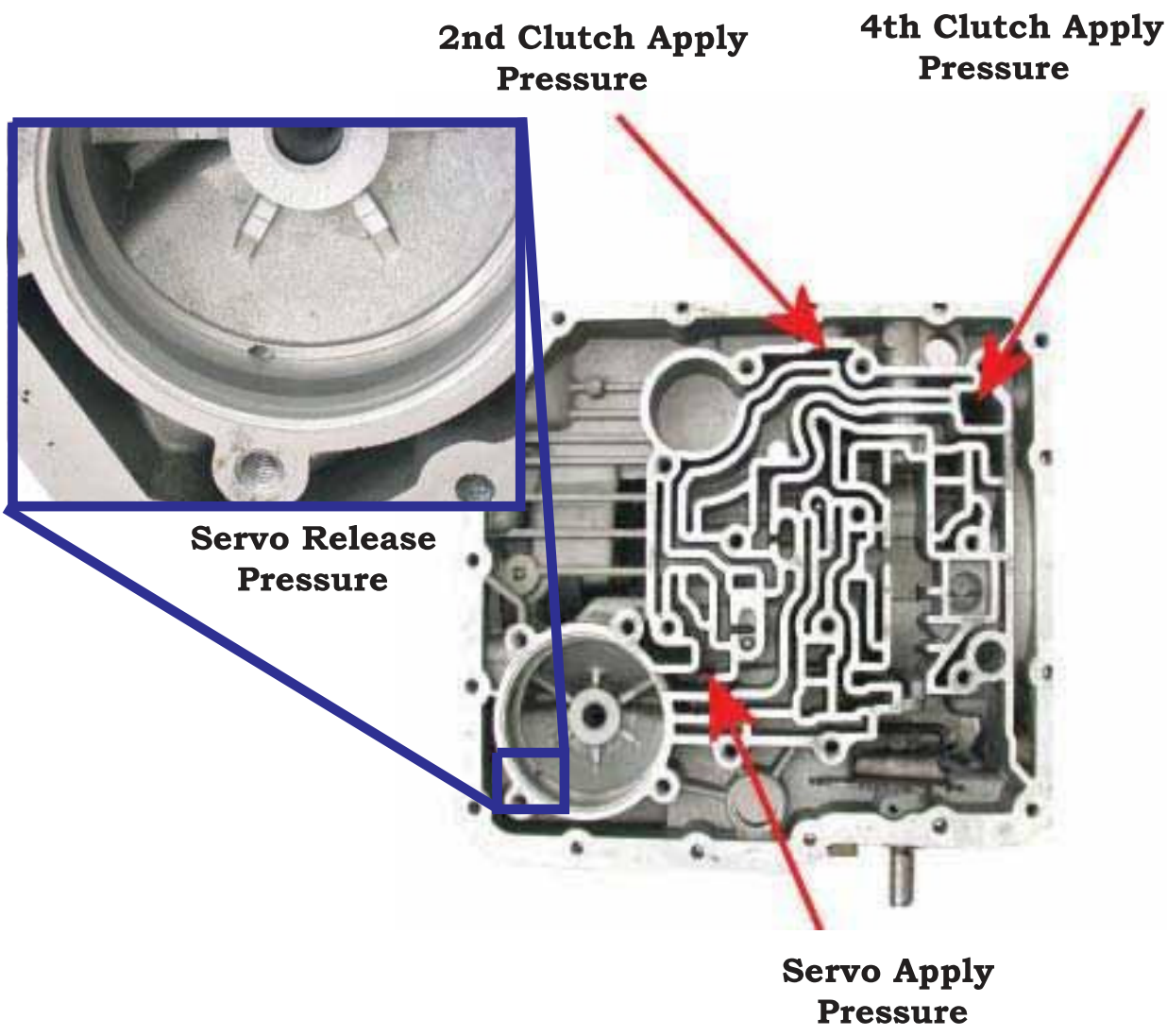


Servo Apply Pressure

Pilot Drill:	1/8”
Tap Drill:	“Q” or 21/64”
Tap:	1/8” NPT

Pressure Tap Circuits

When you are drilling the pressure taps, take notice of the correct circuit locations prior to drilling.



Input Sprag Rotation

No Reverse, No Drive Engagement, Bind in 2nd Gear

If you install the Input Sprag incorrectly or if the sprag has failed; the symptoms that will follow are no reverse, no drive engagement and a bind in 2nd gear. Check the transmission in all ranges, if you have Manual Low, look for the Sprag as the root of the problem.

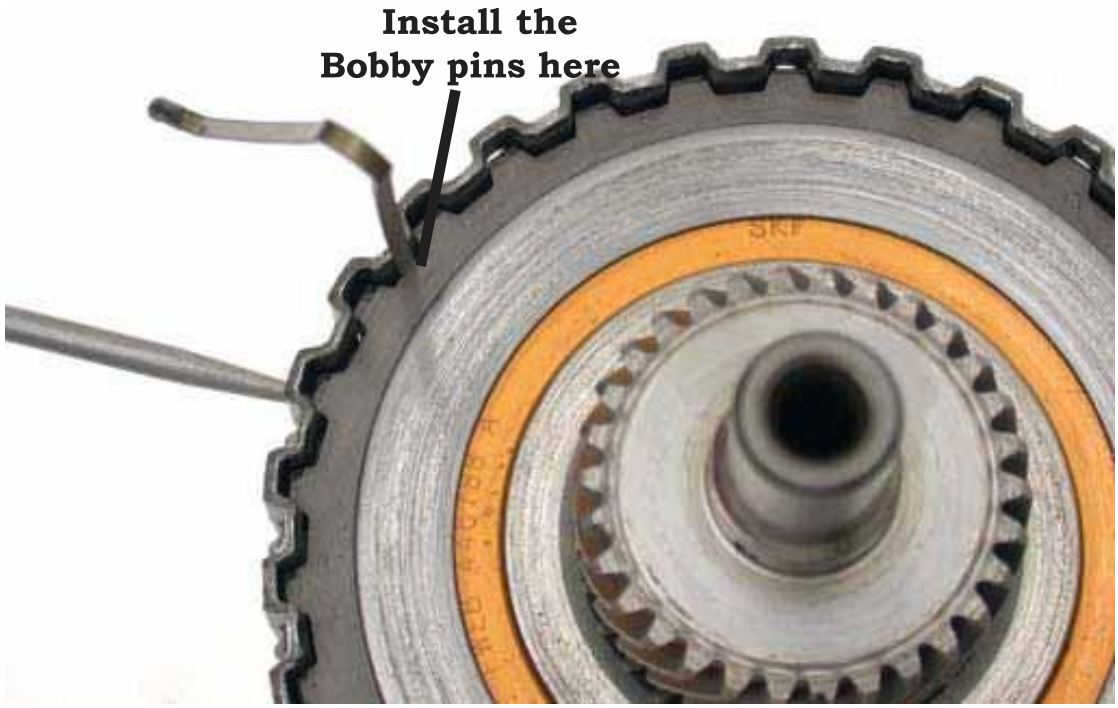
Sun Gear Freewheels
Counter Clockwise

3rd Clutch Drum Disassembly

Tools and Procedures

The correct tool for disassembling the 3rd Clutch Drum assembly is expensive and most technicians do not have this tool. Unfortunately the only other method is using a pick and putting your finger tips and thumbs in jeopardy. The following procedure is an easy inexpensive way around harming yourself.

The Bobby pins may have to be ground in the location shown to fit between the drum and the plate.



3rd Clutch Drum Disassembly

Tools and Procedures (continued)

In order to remove the sprag assembly to gain access to the clutches you must first remove the internal snap ring holding the sprag race assembly to the drum. To do this, start with one end of the snap ring, push in on the snap ring with a scribe and slide a bobby pin between the drum and the snap ring, keeping that portion of the snap ring out of the groove. Work your way around the drum installing several bobby pins until the snap ring is completely out of the groove.

Install several Bobby pins around the 3rd Clutch Drum.

3rd Clutch Drum Disassembly

Tools and Procedures (continued)

Once you have all of the Bobby pins in place, simply use two screw drivers to pop the race out of the drum.

Pry the Sprag Race out with two screw drivers.

3rd Clutch Drum Assembly

Pressure Plate Installation

The 3rd Clutch Cushion Plate should be installed as shown for proper operation. If the 3rd Clutch Cushion Plate is installed incorrectly a harsh 3rd gear will occur. There is no factory specifications for clutch clearance.

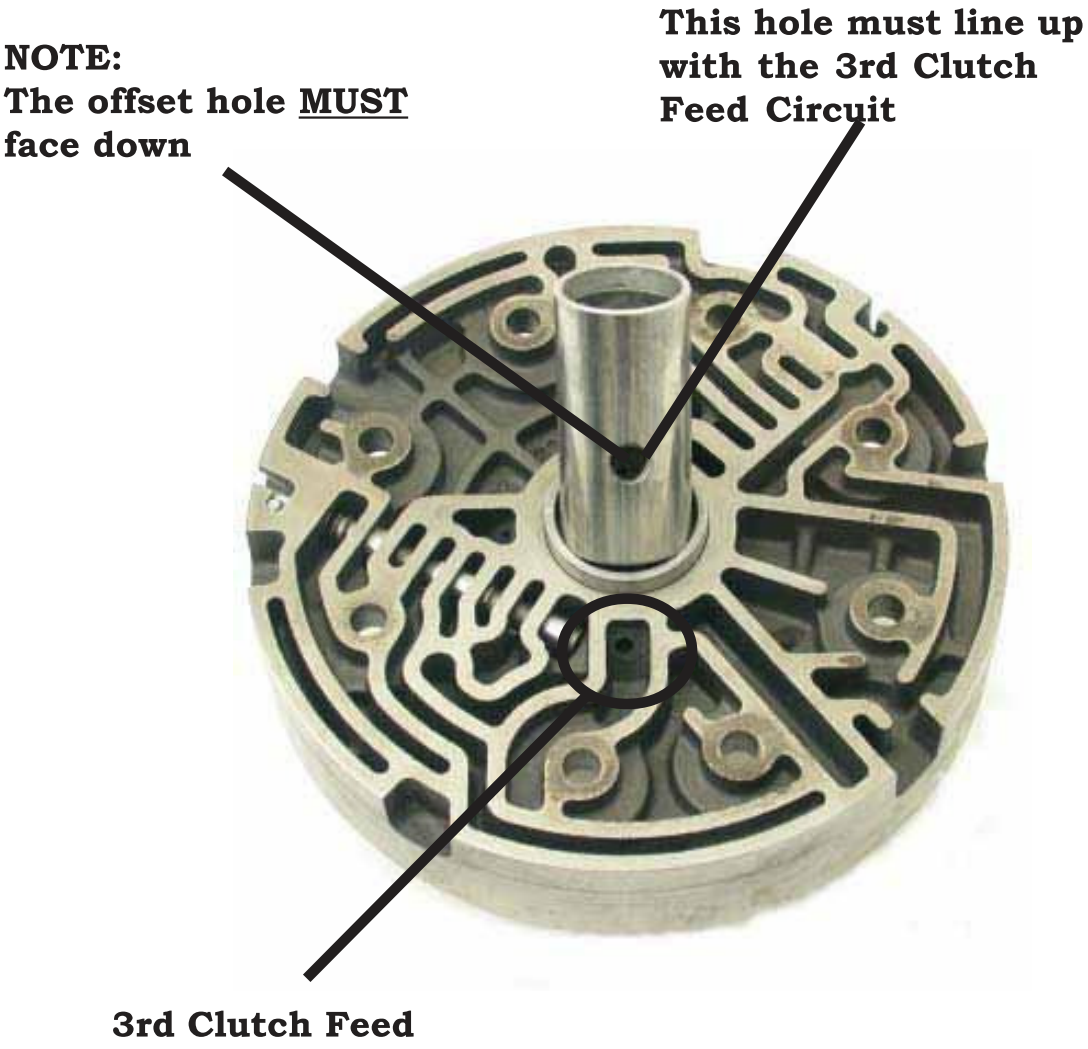
Try to maintain 0.008”-0.010” per disc.

3rd Clutch Cushion Plate is beveled as shown

Binds in 2nd Gear

Bushing Installation

Installation of the 3rd Clutch Bushing is very important. If the feed hole is not aligned properly, 3rd clutch failure will occur. It will also cause a bind in 2nd due to the 3rd clutch staying on.

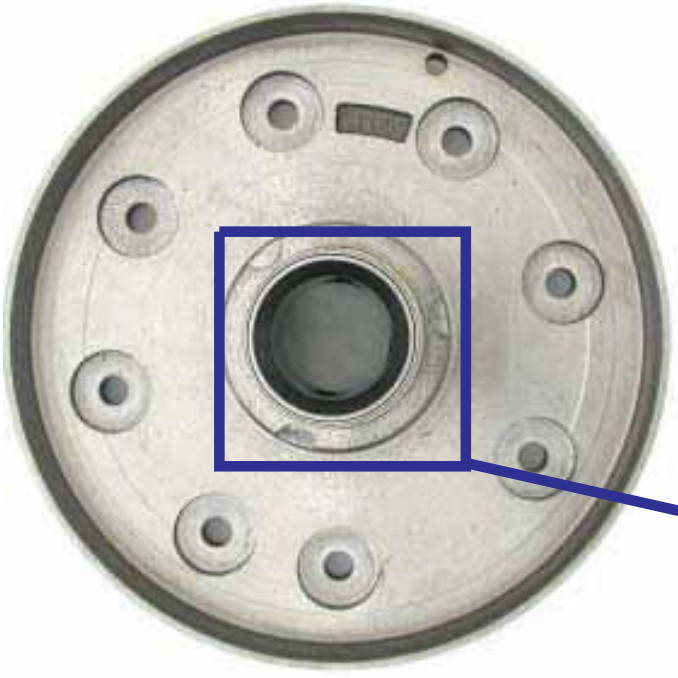


Center Support Washer

Isuzu Washers

Center Supports that use a “no-tab” style thrust washer tend to fail because the plastic washer is allowed to spin on the support. If you choose to machine the “no-tab” style Center Support you can use the 3 tab washers and they are more adjustable for endplay. These washers are also used for the Pump to adjust Over-drive housing endplay.

0.064”	*Yellow*	*8-96013-761-0*
0.070”	*Red*	*8-96013-762-0*
0.077”	*Black*	*8-96013-763-0*
0.084”	*White*	*8-96013-764-0*
0.094”	*Green*	*8-96013-765-0*
0.100”	*Blue*	*8-96013-766-0*



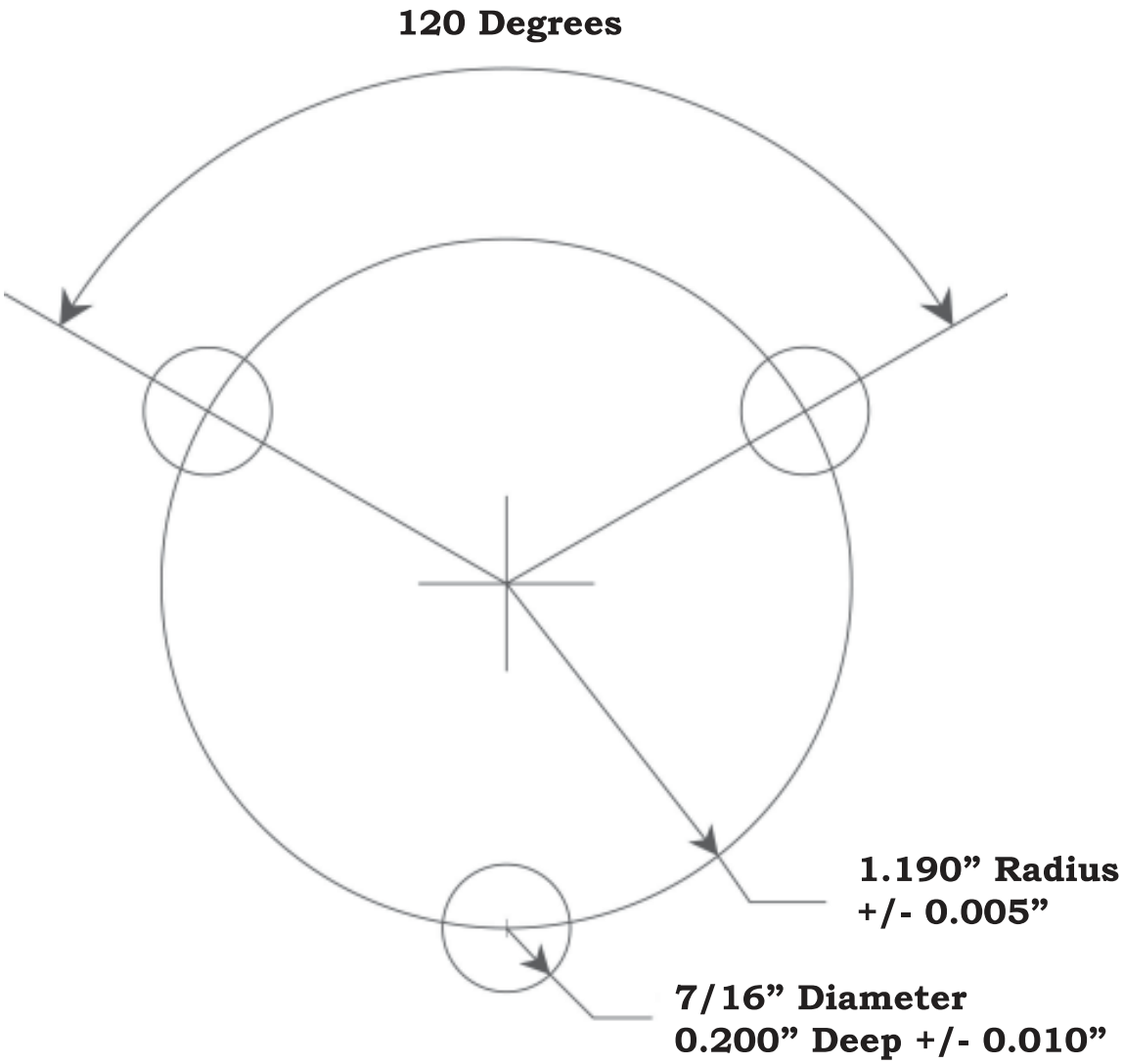
Main Case Endplay
0.014”-0.031”
O/D Case Enplay
0.004”-0.030”

Refer to the Blue Print on the following page

Center Support Washer

Isuzu Washers (continued)

Do not use a drill press to machine the Center Support. It should only be machined on a milling machine. Use this schematic as a reference to machine the Center support area for the three tab washer.



Computer Types

Type 1
1990-1993 Isuzu Rodeo and Trooper

Type 1b
1992-1995 BMW w/4L30E

Type 2
1994-1995 Isuzu Rodeo, Trooper, Amigo and Honda Passport

Type 3
1996-1999 Isuzu Rodeo, Trooper, Amigo, Vehicross, Honda Passport and Acura SLX

Type 4
2000-up Isuzu Rodeo, Trooper, Amigo, Vehicross, Honda Passport and Acura SLX

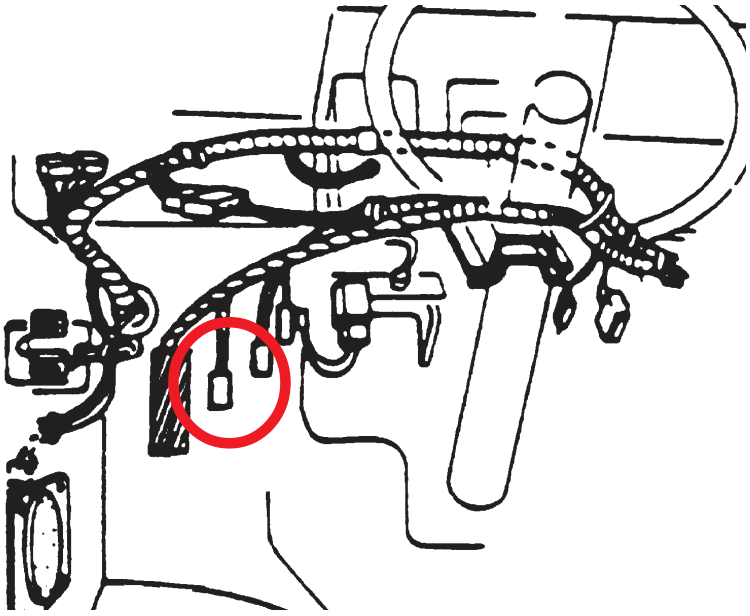
Type 5
1997-1998 Cadillac Catera

Type 6
1996-2001 BMW w/4L30E
1999-2001 Cadillac Catera

Computer Type 1 & 2

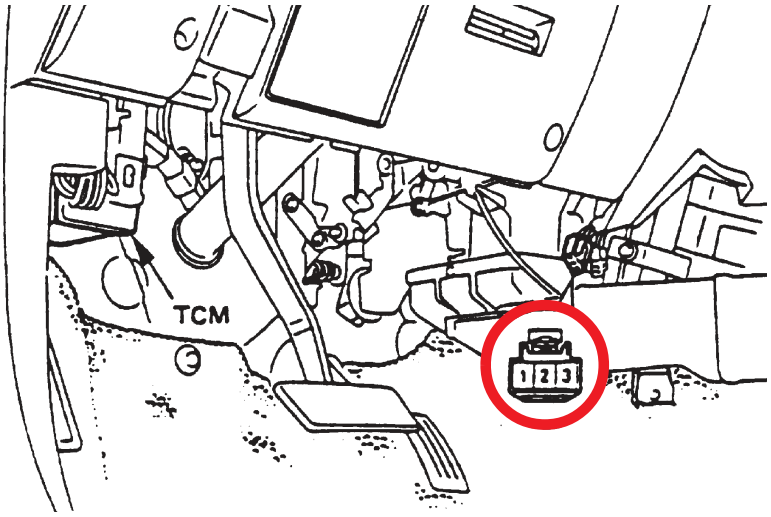
Manual Code Retrieval

1990-1991 Isuzu Troopers used a two-terminal diagnostic connector. To display codes, simply jump the two terminals together.



Ground the Yellow w/Black stripe wire on the 2 or 3 pin connector

1992-1995 Isuzu Troopers have a three-terminal diagnostic connector. To display codes, jump the two outer terminals together.



Type I

Codes

17 1-2/3-4 Solenoid shorted to ground
21 TPS Voltage too high
22 TPS Voltage too low
23 Engine coolant switch voltage high
25 1-2/3-4 Solenoid open or shorted to B+
26 2-3 Solenoid shorted to ground
28 2-3 Solenoid open or shorted to B+
29 TCC Solenoid shorted to ground
31 No engine RPM signal
32 Force Motor circuit amperage too low (Less than 0.095A)
33 Force Motor circuit amperage too high (Higher than 1.5A)
34 Band Apply Solenoid open or shorted to B+
35 Band Apply Solenoid open or shorted to ground
36 TCC Solenoid open or shorted to B+
39 No VSS
41 Gear ratio error
43 Solenoid ground supply circuit open, shorted to ground or shorted to B+
46 Down shift error
48 Low battery voltage (Below 9.0V)
49 High battery voltage (Above 16V)
55 EPROM failure
56 Transmission range switch input incorrect
65 Trans Temp sensor shorted to ground
66 Trans Temp sensor open or shorted to B+
77 Kickdown switch stuck closed (shorted to ground)
82 Transmission range switch input incorrect

Type 2

Codes

11 No VSS
13 No engine RPM signal
15 Trans Temp Sensor open or shorted to B+
16 Trans Temp Sensor shorted to ground
21 TPS Voltage too high
22 TPS Voltage too low
23 TPS connector disconnected
25 Low battery voltage (Below 9.0V)
26 High battery voltage (Above 16V)
31 1-2/3-4 Solenoid open or shorted to ground
32 2-3 Solenoid open or shorted to ground
33 TCC Solenoid open or shorted to B+
34 Band Apply Solenoid open or shorted to ground
35 Force Motor open or shorted
36 Solenoid B+ supply circuit open or shorted to ground
37 Torque management serial line fault
41 1-2/3-4 Solenoid shorted to B+
42 2-3 Solenoid shorted to B+
43 TCC Solenoid shorted to ground
44 Band Apply Solenoid shorted to B+
46 Solenoid B+ supply circuit shorted to B+
51 Engine Coolant Switch open, shorted to ground or shorted to B+
52 Kickdown Switch stuck closed (shorted to ground)
53 Transmission range switch input incorrect in P, N or R position
54 Transmission range switch input incorrect
55 Brake Switch open or shorted to ground
56 Brake Switch shorted to B+
61 Gear ratio error
62 Downshift protection
63 EPROM failure
64 TCC valve stuck on
65 TCC valve stuck off
82 Shift or Band Apply Solenoids faulty during driving

Type 3

Codes

P0218	Transmission fluid over temp
P0560	System voltage malfunction
P0705	Transmission range switch illegal position
P0706	Transmission range switch performance
P0711	TFT sensor performance
P0712	TFT sensor circuit low
P0713	TFT sensor circuit high
P0719	Brake switch stuck on
P0722	Output speed sensor
P0723	Output speed sensor intermittent
P0724	Brake switch stuck off
P0730	Gear ratio error
P0742	TCC stuck on
P0748	Force motor electrical fault
P0751	SSA (1-2/3-4 solenoid) stuck on or stuck off
P0753	SSA (1-2/3-4 solenoid) electrical fault
P0756	SSB (2-3 solenoid) stuck on or stuck off
P0758	SSB (2-3 solenoid) electrical fault
P1790	ROM check sum error
P1792	EEPROM check sum error
P1835	Kickdown switch stuck on
P1850	Band apply solenoid electrical fault
P1860	TCC solenoid electrical fault
P1870	Transmission component slipping

Type 4

Codes

P0218	Transmission fluid over temp
P0502	No VSS signal
P0562	System voltage low
P0563	System voltage high
P0601	PCM/ECM memory checksum
P0602	PCM/ECM programming error
P0604	PCM/ECM RAM error
P0606	Internal performance
P0705	Transmission range switch illegal position
P0706	Transmission range switch performance
P0711	TFT sensor performance
P0712	TFT sensor circuit low
P0713	TFT sensor circuit high
P0719	Brake switch stuck on
P0722	Output speed sensor
P0723	Output speed sensor intermittent
P0724	Brake switch stuck off
P0730	Gear ratio error
P0742	TCC stuck on
P0748	Force motor electrical fault
P0751	SSA (1-2/3-4 solenoid) stuck off
P0752	SSA (1-2/3-4 solenoid) stuck on
P0753	SSA (1-2/3-4 solenoid) electrical fault
P0756	SSB (2-3 solenoid) stuck off
P0757	SSB (2-3 solenoid) stuck on
P0758	SSB (2-3 solenoid) electrical fault

Type 4

Codes

P1120	TPS1 circuit
P1220	TPS2 circuit
P1221	TPS1-TPS2 correlation (circuit performance)
P1271	APS1-APS2 correlation (circuit performance)
P1272	APS2-APS3 correlation (circuit performance)
P1273	APS1-APS3 correlation (circuit performance)
P1275	APS1 circuit
P1280	APS2 circuit
P1285	APS3 circuit
P1790	ROM check sum error
P1792	EEPROM check sum error
P1835	Kickdown switch stuck on
P1850	Band apply solenoid electrical fault
P1860	TCC solenoid electrical fault
P1870	Transmission component slipping

Type 5 & 6 (Except BMW)

Codes

P0218 Transmission fluid over temp
P0560 System voltage malfunction
P0601 TCM internal error
P0703 Brake switch circuit
P0705 Transmission range switch illegal position
P0706 Transmission range switch performance
P0711 Transmission fluid over temp
P0712 TFT sensor circuit low
P0713 TFT sensor circuit high
P0722 Output speed sensor
P0725 Engine RPM signal
P0727 Engine RPM signal
P0730 Gear ratio error
P0742 TCC stuck on
P0743 TCC solenoid electrical fault
P0748 Force motor electrical fault
P0751 SSA (1-2/3-4 solenoid) stuck off
P0752 SSA (1-2/3-4 solenoid) stuck on
P0753 SSA (1-2/3-4 solenoid) electrical fault
P0756 SSB (2-3 solenoid) stuck off
P0757 SSB (2-3 solenoid) stuck on
P0758 SSB (2-3 solenoid) electrical fault
P1560 TCM voltage interrupted
P1600 Transmission power relay circuit (Solenoid B+ supply)

Type 5 & 6 (Except BMW)

Codes

P1605	TCM internal error
P1621	TCM internal error
P1625	Transmission power relay circuit (Main Case Solenoid B+ supply)
P1705	P/N output circuit from ECM to TCM (not the trans range sensor)
P1740	Torque management circuit
P1743	TPS signal invalid from ECM to TCM
P1760	Keep alive power circuit fault
P1740	Torque management circuit
P1792	Engine coolant circuit
P1800	Transmission power relay circuit (Main Case Solenoid B+ supply)
P1835	Kickdown switch stuck on (info from ECM on some models)
P1844	TCS torque reduction request circuit
P1845	Gear ratio output to ABS
P1850	Band apply solenoid electrical fault
P1870	Transmission component slipping
P1890	ECM to TCM data input circuit (TPS data incorrect on some models)
P1895	Engine torque delivered circuit (TCM to traction control module)
U2100	CAN bus circuit
U2104	CAN bus circuit
U2105	CAN bus circuit
U2108	CAN bus circuit